

Remarks

The Office Action mailed April 4, 2006 has been carefully reviewed and the following remarks have been made in consequence thereof.

Claims 1-19 are now pending in this application. Claims 8-19 are withdrawn from consideration. Claims 1-7 are rejected.

The rejection of Claims 1-7 under 35 U.S.C. § 103(a) as being unpatentable over Randolph Jr. et al. (U.S. Patent 6,453,211) in view of Li et al. (U.S. Patent App. 2006/0021680) is respectfully traversed.

Randolph describes a method of repairing a blade wherein “the locally damaged region of the blade is cut away and weld repair is used for rebuilding the cut-away region larger than the nominal configuration thereat. The weld repair must then be re-machined back to the nominal configuration therefor within specified tolerances with little or no step discontinuity remaining at the interface between the weld repair and the original blade material.” However, at Col. 2, lines 14-19, Randolph further describes that “[i]n a recent development program, the weld repair of **titanium blisks** for a gas turbine compressor application **is being explored.**” (emphasis added). Moreover, Randolph does not describe nor suggest “depositing **titanium weld material** onto the leading edge, trailing edge, and tip cut-backs” as recited in Claim 1. Rather, and in contrast to the present invention, Randolph describes at Col. 9, lines 44-45 that the repair method described above has particular utility for repairing expensive unitary blisks which may have damage to the **leading or trailing edges** of any one or more of the blades thereof.”

Moreover, Applicants respectfully traverse the assertion in the Office Action that Randolph describes “**removing titanium alloy** material from along the leading and trailing edges of the airfoil, and along a radially outer tip of the airfoil to form respective leading edge, trailing edge, and tip cutbacks, with each define cutback depths.” Rather, as explained above, Randolph describes at Col. 9, lines 44-45 that the repair method described above has particular utility for repairing expensive unitary blisks which may have damage to the **leading or trailing edges** of any one or

more of the blades thereof.” As such, Randolph does not describe nor suggest “**removing titanium alloy material** (emphasis added) from along the leading and trailing edges of the airfoil, **and along a radially outer tip of the airfoil** to form respective leading edge, trailing edge, and tip cutbacks, with each define cutback depths,” as is asserted in the Office Action. As such, Randolph does not describe nor suggest that material is removed from the tip portion of the blade.

Moreover, Applicants respectfully traverse the assertion in the Office Action that Randolph describe “depositing **titanium weld material** onto the leading edge, trailing edge, and tip cut-backs.” (emphasis added). Rather, as discussed above, Randolph describes that the weld repair of **titanium blisks** for a gas turbine compressor application **is being explored**. As such, the prior art is describing that some manufacturer are exploring the possibility of repairing a titanium blisk, however, Randolph does not describe nor suggest the actual of repairing the disk.

As such, if the Examiner continues to rely on this reference to reject the claimed invention, Applicants respectfully request the Examiner to provide a detailed citation, including page and line number, etc., of the portion of the reference the Examiner is relying for each specific element recited in the claims, to allow the Applicants the opportunity to respond more thoroughly to the rejection.

Li describes a compressor blade (20) that comprises an aerofoil (22), a platform (24), a root (26), and a tip portion 28. Li also describes that the tip portion may comprise weld filler deposited onto the aerofoil by using burn resistant beta titanium alloy as the weld filler during welding.

Li does not describe nor suggest “removing titanium alloy material from along leading and trailing edges of the airfoil, and along a radially outer tip of the airfoil to form respective leading edge, trailing edge, and tip cut-backs which each define cut-back depths.” Specifically, Li does not describe nor suggest that any titanium material is removed along the outer tip of the airfoil. Rather, as best understood by the Applicants, Li is not describing a method of repairing a blade, rather a method of fabricating a new blade, and as such does not describe nor suggest removing material along the outer tip of the airfoil.

Moreover, Applicants respectfully traverse the assertion in the Office Action that Li teaches removing material along either the leading or trailing edges of the blade, and “depositing **titanium weld material** onto the leading edge, trailing edge, and tip cut-backs.”

Claim 1 recites a method of repairing a gas turbine engine compressor blade airfoil that includes “removing titanium alloy material from along leading and trailing edges of the airfoil, and along a radially outer tip of the airfoil to form respective leading edge, trailing edge, and tip cut-backs which each define cut-back depths...depositing titanium weld material onto the leading edge, trailing edge, and tip cut-backs...and removing at least some of the titanium weld material to obtain pre-desired finished dimensions for the leading and trailing edges, and radially outer tip.”

Neither Randolph or Li, considered alone or in combination, describe or suggest the method recited in Claim 1. Specifically, neither Randolph or Li, considered alone or in combination, describe or suggest **removing titanium alloy** material from along leading and trailing edges of the airfoil, and along a radially outer tip of the airfoil to form respective leading edge. Rather, as discussed above, Randolph describes removing material along a leading and trailing edge of a known airfoil, and that the weld repair of **titanium blisks** for a gas turbine compressor application is being explored. Moreover, Li does not describe nor suggest removing any material from the blade. Additionally, neither Randolph or Li describe or suggest depositing a titanium weld material onto the leading edge, trailing edge, and tip cut-back. As such, Applicants respectfully submit that Claim 1 is patentable over Randolph in view of Li.

Claims 2-7 depend from independent Claim 1. When the recitations of Claims 2-7 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claims 2-7 likewise are patentable over Randolph in view of Li.

Moreover, Applicants respectfully submit that the Section 103 rejection of the presently pending claims is not a proper rejection. As is well established, obviousness cannot be established by combining the teachings of the cited art to produce the claimed invention, absent some teaching, suggestion, or incentive supporting the

combination. Neither Randolph nor Li, considered alone or in combination, describe or suggest the claimed combination. Furthermore, in contrast to the assertion within the Office Action, Applicants respectfully submit that it would not be obvious to one skilled in the art to combine Randolph and Li since neither Randolph or Li describe or suggest removing material along a leading and trailing edges, and tip portion of a titanium blade and depositing a titanium weld material onto the leading edge, trailing edge, and tip cut-back.

Additionally, the Examiner has not pointed to any prior art that teaches or suggests to combine the disclosures, other than Applicants' own teaching. Rather, only the conclusory statement that "it would have been obvious at the time the invention was made to a person having ordinary skill in the art to combine Randolph with Li to "prevent it from burning if friction occurs between the titanium alloy compressor blade and a compressor casing during operation of the gas turbine engine" suggests combining the disclosures. First, Randolph does not describe a method of repairing a titanium blade using a titanium welding material or describe repairing the tip portion of the titanium blade. Second, Li does not describe repairing any of the tip portion or the leading and trailing edges using titanium welding filler.

As the Federal Circuit has recognized, obviousness is not established merely by combining references having different individual elements of pending claims. Ex parte Levengood, 28 U.S.P.Q.2d 1300 (Bd. Pat. App. & Inter. 1993). MPEP 2143.01. Rather, there must be some suggestion, outside of Applicants' disclosure, in the prior art to combine such references, and a reasonable expectation of success must be both found in the prior art, and not based on Applicant's disclosure. In re Vaeck, 20 U.S.P.Q.2d 1436 (Fed. Cir. 1991). In the present case, neither a suggestion or motivation to combine the prior art disclosures, nor any reasonable expectation of success has been shown.

Furthermore, it is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the cited art so that the claimed invention is rendered obvious. Specifically, one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the art to deprecate

the claimed invention. Further, it is impermissible to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art. The present Section 103 rejection is based on a combination of teachings selected in an attempt to arrive at the claimed invention. Since there is no teaching nor suggestion in the cited art for the combination, the Section 103 rejection appears to be based on a hindsight reconstruction in which isolated disclosures have been picked and chosen in an attempt to deprecate the present invention. Of course, such a combination is impermissible, and for this reason alone, Applicants request that the Section 103 rejection be withdrawn.

Accordingly, for at least the reasons set forth above, Claim 1 is submitted to be patentable over Randolph in view of Li.

Claims 2-7 depend from independent Claim 1. When the recitations of Claims 2-7 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claims 2-7 likewise are patentable over Randolph in view of Li.

For at least the reasons above, Applicants respectfully request that the rejection of Claims 1-7 be withdrawn.

The rejection of Claims 1-7 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claims 1-7, and 14 of U.S. Patent 6,532,656 in view of U.S. Patent 6,453,211 is respectfully traversed.

Applicants respectfully submit that Claims 1-7 of the present application have not been finalized, because there has been no indication that these claims contain allowable subject matter. As such, Applicants submit that the obvious-type double patenting rejection is only a provisional rejection. Accordingly, Applicants respectfully request that the obvious-type double patenting rejection of Claims 1-7 be withdrawn at this time.

In view of the foregoing amendment and remarks, all the claims now active in this application are believed to be in condition for allowance. Reconsideration and favorable action is respectfully solicited.

Respectfully Submitted,



Phillip A. Shipley
Registration No. 51,357
ARMSTRONG TEASDALE LLP
One Metropolitan Square, Suite 2600
St. Louis, Missouri 63102-2740
(314) 621-5070